



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/727,820

12/04/2003

Craig Andrews

LYNN/0169

7460

24945 7590 03/11/2008

STREETS & STEELE
13831 NORTHWEST FREEWAY
SUITE 355
HOUSTON, TX 77040

EXAMINER

ECHELMMEYER, ALIX ELIZABETH

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

03/11/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/727,820	Applicant(s) ANDREWS, CRAIG	
	Examiner Alix Elizabeth Echelmeyer	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,6-10 and 18-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6-10 and 18-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is in response to the amendment filed December 7, 2007.
Claim 8 has been amended. Claims 1, 6-10 and 18-20 are pending and are rejected finally for the reasons given below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 6-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Milgate, Jr. et al. (US Patent 6,852,441) in view of Bonnaud et al. (US Patent 5,037,711).

Milgate et al. teach a fuel cell stack having reinforcing members as support frames to restrict stress and minimize strain in the fuel cell frames caused by high internal pressure (column 3 lines 35-63). For fuel cells having a cylindrical frame, the reinforcing member is a cylinder surrounding the outside of the frame. As seen in Figures 1 and 3, the frames are generally planar. The planar components, or cell frames as they are called in Milgate et al., are plastic (column 2 lines 40-63; column 4 line 56).

As for claims 6 and 7, Milgate et al. teach that the reinforcing cylinder is in place to restrict the stress and strain caused by the internal pressure from the fluids required for the operation of the fuel cell (abstract, column 3 lines 35-64). Thus, the fluids in the stack would be pressurized, pressing out against the reinforcing member and placing the member in tension.

With regard to claims 8-10, Milgate et al. teach a plurality of reinforcing rings to help contain fuel cell frames not capable of withstanding internal pressure (column 2 lines 46-54; column 3 lines 6-11). The plurality of bands can reinforce a single cell or a plurality of cells, or a plurality of substacks within a stack.

Milgate et al. fail to teach that the reinforcing bands comprise polyamide fibers, or that the polymer component comprises substantially the same polymer material as the polymer binder.

Bonnaud et al. teach an insulating binding for a stack of electrochemical cells (abstract). The binding is made of polyamide (column 2 lines 55-56).

Bonnaud et al. further teach that the binding is resistant to the chemicals of the cells.

It would be desirable to use the insulating, or non-conducting, binding, or band, of Bonnaud et al. in the cell of Milgate et al. because the band is resistant to the chemicals of the cell.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the insulating, or non-conducting, binding, or band, of Bonnaud et al. in the cell of Milgate et al. because the band is resistant to the chemicals of the cell.

4. Claims 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Milgate, Jr. et al. in view of Bonnaud et al. as applied to claim 1 above, and in further view of Cousin et al. (US 4,707,977), Blunk et al. (US 2003/0096151) and Applicant's Admission of Prior Art.

The teachings of Milgate et al. and Bonnaud et al. as discussed above are incorporated herein.

Regarding claim 21, Milgate et al. in view of Bonnaud et al. teach polyamide reinforcing bands but fail to teach that the reinforcing bands contain a binder.

Cousin et al. teach a composite cord having high tensile strength and the ability to resist physical and chemical attack (abstract; column 1 lines 17-30).

Cousin et al. further teach that the cords are made of polyamide fibers with a thermoplastic binder (column 5 lines 3-9).

Bonnaud et al. and Cousin et al. are analogous art since both are concerned with bands that are used to reinforce components.

It would be desirable to use the cords of Cousin et al. to form the bands in Milgate et al. in view of Bonnaud et al. since the cords have having tensile strength and

are resistant to physical and chemical attack, conditions that are necessary in the environment of the cell of Milgate et al.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the cords of Cousin et al. to form the bands in Milgate et al. in view of Bonnaud et al. since the cords have having tensile strength and are resistant to physical and chemical attack.

Regarding claims 18, 19, 20 and 22, Blunk et al. teach a fuel cell having a bipolar plate for delivering reactants to the membrane electrode assembly (abstract). The bipolar plate, as seen in Figure 2, provides a gas barrier (58) between the anode of one cell and the cathode of the next, while also allowing for fluids to pass.

Blunk et al. further teach that the bipolar plate comprises polyamide and is conductive. The plate is oxidation and acid resistant ([0027]). The plate contains many different materials, and would inherently have to include a binder in order to bind the compound together.

It would be desirable to make a gas barrier plate for the fuel cell system of Milgate et al. comprising polyamide, as taught by Blunk et al., since it is oxidation and acid resistant and provides reactants to the fuel cell, allowing it to operate.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make a gas barrier plate for the fuel cell system of Milgate et al. comprising polyamide, as taught by Blunk et al., since it is oxidation and acid resistant and provides reactants to the fuel cell, allowing it to operate.

Further, it would have been obvious to make the plate conductive since, as it is known to one having ordinary skill in the art, the bipolar plate is often used as a current collector, and Applicants teach in the specification that it is typical to make a gas barrier plate electrically conducting (p. 8 lines 21-23 of the specification).

Response to Arguments

5. Applicant's arguments filed December 7, 2007 have been fully considered but they are not persuasive.

Applicant argues that the combination of Milgate et al. and Bonnaud et al. from the rejection mailed August 10, 2007 does not teach all of the limitations of the claims, namely the requirement that the band and the polymer component are integrated, and that each polymer component is encircled by a band.

While the specification does disclose that the band and the polymer component are integrated, the specification also discusses ways of integrating the band and the polymer component: "the band may be snapped into place, clamped, adhesively bonded, wrapped or otherwise fastened ..." (see page 7 of specification, [0024] of the Pre-Grant Publication of the instant invention). Milgate et al. teach the bands fitted to the outer edge of the polymer component (column 3 lines 10-11 of Milgate et al.). It is the position of the examiner that the bands of Milgate et al. are fitted to the polymer component. Further, since Merriam-Webster defines integrate as "to unite something with something else," when the bands of Milgate et al. are fitted to the perimeter of the polymer component, they are integral.

Applicant next argues that Milgate et al. do not teach a plurality of bands, with one band around each polymer component. Applicant is directed to column 3 of Milgate et al., where it is stated: "each reinforcing rings surround[s] a single cell frame" (lines 7-8).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is (571)272-1101. The examiner can normally be reached on Mon-Fri 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy N. Tsang-Foster can be reached on 571-272-1293. The fax phone

Art Unit: 1795

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Susy N Tsang-Foster/
Supervisory Patent Examiner, Art Unit 1795

Alix Elizabeth Echelmeyer
Examiner
Art Unit 1795

aee